Attorney Docket No. 22203.00

IN THE APPLICATION

OF

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FOR AN

INFANT EYE TRAINER

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INFANT EYE TRAINER

CROSS-REFERENCE TO RELATED APPLICATION

This application claims the benefit of U.S. Provisional Patent Application Serial No. 60/471,330, filed May 19, 2003.

BACKGROUND OF THE INVENTION

1. FIELD OF THE INVENTION

The present invention relates to eye trainers, and more specifically to an infant eye-training device used in conjunction with a baby bottle.

2. DESCRIPTION OF THE RELATED ART

Infants are born with very poor eyesight, possessing about one-fortieth the visual ability of normal adults. Eyesight does not develop naturally. Studies have shown that visual stimulation is necessary to develop good eyesight. The crucial period of eyesight development in infants is within the first six months after birth. During this period, the eye muscles strengthen, thus developing greater focus, and the cones develop, improving color vision.

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It is now recognized that parents can help strengthen their infant's eyesight by providing visual stimulation. Nursery decorations, patterned mobiles, and changes of scenery all help to this end. Studies have shown that certain patterns and color combinations, such as high-contrast images, may be more effective than others in strengthening an infant's eyesight at a given stage of eyesight development.

Not only does visual stimulation strengthen infant eyesight, it also leads to cognitive development; the infant begins to understand what it sees. Infants need to develop crucial object perception skills to recognize shape, size, color, orientation, motion, and depth. As an infant develops cognitively, it begins to process these visual clues to develop unit formation and surface segregation skills. Later on in development, infants start to process visual clues to recognize and remember arbitrary relations.

Although sight alone can develop these skills, studies suggest that multimode stimulation enhances an infant's cognitive development. For example, a 1-month-old infant can visually recognize an object's smooth or nubby texture after mouthing the object. Similarly, by three weeks of age, infants can detect the relationship between the sight and sound of an object's impact, and by three to five months of age, infants detect intermodal

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audiovisual relations in the changing distance, substance, rhythm, and tempo of an event. Additionally, studies have shown that when information is presented concurrently in two sense modalities, such as sight and sound, it selectively recruits the infant's attention and facilitates cognitive development.

Certain properties of objects and events are modality specific. For example, the color and brightness of an object can only be detected visually, while pitch and timber can only be detected aurally. Such properties are called modal properties, whereas properties that can be detected in more than one of the sense modalities are amodal properties.

Often, an event conveys information about an object's properties both modally and amodally. For example, the rhythm of a bouncing ball can be perceived through sight or sound, but the color of the ball can only be visually perceived. There is no correlation between the rhythm of a bouncing ball and its color. Instead the relationship is arbitrary. Relations between properties in two sense modalities that do not predictably occur together in nature or across contexts are called arbitrary intermodal relations. Such relations are best learned intermodally.

Although there are a variety of eye training devices, very few, if any, are designed to be used on infants to develop and

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strengthen eyesight either physically or cognitively. One factor that may contribute to the lack of infant eye training devices is that only recently scientist and researchers have begun to understand how infant sight develops both physically and cognitively. Another factor is the difficulty of placing such a device where an infant may focus on it, and selectively recruit the infant's attention for any extended period of time.

During the first six months after birth, an infant can focus on objects that are six to fifteen inches away. Therefore, an infant eye-training device should be placed at a distance where the infant can focus on the device. Placing a device on the end of a baby bottle would place it in this focal range.

U.S. Pat. No. 5,880,811, issued to Parisi, discloses a device comprising a visually stimulating ornament having a flat head (2-dimensional) shape that is generally round and attaches to and extends from a baby bottle. The Parisi device is designed to prevent an infant from going cross-eyed by giving it something to focus on with its eyes other than the bottle. Although the invention is referred to as an infant eye trainer, it serves as a prophylaxis in trying to prevent an infant from going cross-eyed. There are no devices, however, that attach to a baby bottle and proactively strengthen and enhance infant eyesight physically or cognitively. A device, which attaches to a baby bottle and that

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proactively helps to strengthen and develop an infant's eyesight, both physically and cognitively, would be desirable.

None of the above inventions and patents, taken either singly or in combination, is seen to describe the instant invention as claimed.

SUMMARY OF THE INVENTION

The present invention is an infant eye trainer that is mounted on a baby bottle for strengthening and developing infant eyesight. The trainer has a case having a front panel that has a display area for viewing images. The case has a flange extending from the front panel that defines a well adapted for receiving the bottom of a baby bottle. A resilient adapter is placed around the baby bottle and wedged between the bottle and the flange to retain the case on the bottle with the display in the infant's focal area. The images may be provided by transparencies viewed through a transparency viewer, or by images stored on a fixed database and displayed on an LCD display.

Accordingly, it is a principal object of the invention to provide an infant eye training device used in conjunction with a baby bottle to strengthen infant eyesight.

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It is another object of the invention to provide an infant eye-training device that will accelerate the development of infant eyesight.

It is a further object of the invention to provide an infant eye-training device that enhances infant cognitive development associated with vision in order to help infants to recognize and remember what they are seeing.

Still another object of the invention is to enhance infant vision through audiovisual stimulation.

Yet another object of the invention is to provide an infant eye-training device that can use different audio and visual programs geared towards the infant's particular developmental stage.

It is an object of the invention to provide improved elements and arrangements thereof in an apparatus for the purposes described which is inexpensive, dependable, and fully effective in accomplishing its intended purposes.

These and other objects of the present invention will become readily apparent upon further review of the following specification and drawings.

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BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is an environmental, perspective view of an infant eye trainer according to the present invention.

Fig. 2 is an exploded view an infant eye trainer according to the present invention.

Fig. 3 is a block diagram of an infant eye trainer according to the present invention.

Fig. 4 is a perspective view of an infant eye trainer according to another embodiment of the present invention.

Fig. 5 is a rear view of the infant eye trainer of Fig. 4.

Fig. 6 is an exploded view of the infant eye trainer of Fig. 4.

Fig. 7 is an exploded, rear perspective view of the infant eye trainer according to an additional embodiment of the present invention.

Similar reference characters denote corresponding features consistently throughout the attached drawings.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Fig. 1 is an environmental, perspective view of an infant eye trainer **10** according to the present invention mounted on a baby bottle **80**. The infant eye trainer **10** includes a case **12** that houses electronic components. Embedded in the case is a liquid

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crystal display (LCD) panel **14**. An insertion port **16** is formed in the case **12**. As shown in Fig. 2, an external fixed database **18** is inserted into the insertion port **16** to change the image shown on the LCD panel **14**. The fixed database is preferably an external read only memory (ROM) cartridge. The fixed database may use any form of memory database, such as memory chips, and the database used will depend on the amount of memory needed to deliver the desired information to the LCD panel **14**. Although the insertion port **16** is shown on the upper surface of case **12**, it will be obvious to one skilled in the art that the location of the insertion port **16** is not critical, and that the insertion port **16** may be located in any convenient alternative position. A menu toggle up push button **20**, a menu toggle down push button **22**, and a menu select push button **24** are disposed on the front panel of the case **12**. These buttons allow the user to select and implement various setting and options.

The infant eye trainer **10** also has a speaker **26** on the front panel of the case **12**. The case **12** is additionally provided with an on/off switch **28**, and a volume adjustment **30**.

An external read only memory (ROM) **18a**, in which is stored an infant eye-training program, is incorporated in the external fixed database **18**. When the external fixed database **18** is loaded in the infant eye trainer **10**, the infant vision-training program is

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executed in such a way that an image is displayed on the LCD panel **14**, and sound is generated by the speaker **26**. The fixed database **18** may optionally include music that can be played through the speaker **26**. The image may be a still image, or may be a moving image. It will be understood that the provision for audio playback is an optional feature of the infant eye trainer **10**, and not essential to the invention.

A flange **42** protrudes from the front surface of case **12**. The flange **42** has an inner diameter greater than the diameter of a baby bottle **80**, and a depth sufficient to secure the infant eye trainer **10** onto the baby bottle **80**. A resilient adapter ring **46** is placed around the base of the baby bottle **80**. The infant eye trainer **10** is mounted on the baby bottle **80** by compressing the adapter ring **46** and wedging the ring **46** in the cylindrical well defined by the flange **42** and the front panel of the case **12**. The adapter ring **46** may be made from foam rubber or similar material.

Referring to Fig. 2, the adapter ring **46** may be easily removed from the flange **42**, and from the baby bottle **80**. Thus, the adapter ring **46** may be easily washed or replaced. Because baby bottles do not come in just one shape or size, the inner wall of the adapter ring **46** need not be limited to the shape of a circle, but may be of any shape that will provide sufficient frictional force to secure a baby bottle.

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Fig. 3 is a block diagram showing the configuration of the electronic components of the Fig. 1 embodiment. A microprocessor **32** receives input from a cartridge connector **34** and a controller key matrix **36.** The microprocessor **32** outputs data to form images on the LCD panel **14,** and to produce sound through the speaker **26** when the trainer **10** is so equipped. A power switch **38** switches on and off the current flowing from a power source **40** to the microprocessor **32.** A volume control **42** adjusts the sound intensity coming from the speaker **26.**

Fig. 4 is a perspective view of an infant eye trainer **10a** according to another embodiment of the present invention. The infant eye trainer **10a** includes a case **12a.** Embedded in the case **12a** is a viewing window **60,** which is translucent or transparent. The viewing window **60** may also be a magnifying lens.

Referring to Fig. 6, on the upper side surface of case **12a** an image wheel insertion slit **62** is formed at a position opposite the viewing window **60.** An image wheel **64** having at least one translucent image **70** located therein is removably inserted into the image wheel insertion slit **62.** It is understood that the image **70** is exemplary in nature, and that there are many different images that may be used to help train infant eyesight.

The image wheel **64** may be rotated so as to allow viewing of different images through viewing window **60.** A knob **66** is

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positioned on the rear surface of the case **12**, opposite the image wheel insertion slit **62**, as seen in Fig. 5. The knob **66** is attached to an axle **68** that is slidably positioned so that the axle **68** may be removably inserted into ring **72**. When the axle **68** is positioned within ring **72**, rotation of the knob **66** rotates the axle **68**, which in turn rotates the image wheel **64**. It will be obvious to those in the art that a variety of means may be used to rotate the image wheel **64**, such as physically rotating the image wheel **62** with one's hand or finger. Additionally, a wind-up mechanical device may be used to rotate the image wheel **64**.

The infant eye trainer **10** may also provide a releasable fastener on the back of the case **12**. The releaseable fastener is preferably a Velcro strap but may also be any snap or latch fastener. The Velcro strap will allow the infant eye trainer to be releasably secured to a baby stroller or a crib so that the infant may view the images from the infant eye trainer **10** at times other than when the infant is using a bottle.

Fig. 7 depicts an additional embodiment of the infant eye trainer **100**. The infant eye trainer **100** according to the present embodiment provides a safer design of the image wheel **164**. In the present invention the eye trainer **100** has a wheel insertion slot **162** disposed along the top of the eye trainer **100**. A knob receiving slot **122** is disposed along the rear surface **120** of the

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infant eye trainer **100**. The infant eye trainer **100** further comprises an image wheel **164** having a wheel turning knob **172** disposed on the rear of the image wheel **164**.

When the image wheel **164** is inserted into the wheel insertion slot **162** on the eye trainer **100**, the wheel turning knob **172** slides down through the knob receiving slot **122**. The knob receiving slot **122** provides a knob retaining portion **124** that secures the turning knob **172** in place while the image wheel **164** is inserted in the eye trainer **100**. While the turning knob **172** is positioned in the knob retaining portion **124** the user of the eye trainer **100** may turn the knob **174** to rotate the image wheel **164**. The wheel turning knob **174** secured to the rear of the image wheel **164** replaces the knob **66** that is releasably secured to the rear of the eye trainer **10** in the previous embodiments. The present design prevents the knob **174** from being removed by the child and swallowed, thus preventing harm to the child.

It is to be understood that the present invention is not limited to the sole embodiments described above, but encompasses any and all embodiments within the scope of the following claims.

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